

# PERFORMANCE RECORD

WEST BENGAL STATE ELECTRICITY BOARD

**WBSEB**







## INTRODUCTION

WBSEB's journey through three decades of challenging propositions saw many ups and downs. The undaunted mettle of sheer determination enabled it to cross the hurdles. Today, the Board is confidently poised to seek new vistas of propagation.

The remarkable improvement in generation, transmission and distribution of electricity in the recent years has unveiled new horizons in the industrial sector. Entrepreneurs are coming forward to invest with renewed interest.

The power position in the state has at last acquired a stability enough to generate new hopes. The power production has shot up by 35%.

The 400 KV Jeerat Sub-station and the Birpara Sub-station are receiving power from NTPC's Farakka Thermal Power Project and Chukha Hydel Station in Bhutan respectively.

In view of the immaculate improvement in generation, WBSEB is now well geared to maintain fluctuation free steady supply of power. The arena of distribution needs immediate attention. Here activities will be emphatically accelerated with the interests of the domestic consumers in mind.

The Board's involvement with the State's development schemes spans a wide horizon. The 400 KV Kolaghat-Jeerat transmission line is successfully installed. The Falta Export Processing Zone faces no dearth of power supply. Supply of adequate power is ensured at the Salt Lake Electronics Complex. Keeping the people's welfare under prime consideration 2 lakhs new domestic consumers have been provided connections in 2 Years.

WBSEB has been working day and night to light up the remote village corners. As a result 57.5% of the villages in W.Bengal are now electrified. Under the 'Lok deep' Scheme electricity has reached, free of cost, to thousands of people in rural Bengal, assuring a better living and a brighter future.

The Board now ventures out to seek new sources of Power generation to match the increasing demands. The possibilities of power generation from different natural resources are being investigated, e.g. Wind power, Solar power, Tidal power, Micro mini and Low head Hydel power etc.

The graphic manifestation of the Board's performance in the following pages will amply demonstrate WBSEB's present position and prospective strategy to render the best of services for the progress and development of the State.

**WBSEB**



## Power Position in West Bengal -A new horizon in view.

The West Bengal State Electricity Board was set up in 1955 to reach the boon of electricity to every stratum and every sector of life. The Board's multifarious projects took off with great potential for an immaculate prolusion. Today besides WBSEB, CESC, DVC and DPL are the other major sources contributing to the power needs of the state.

Today, WBSEB not only supplies electricity to its 10 lakh consumers but it carries the responsibility of propagating uninterrupted generation, competent transmission and designed distribution system. In the process WBSEB caters to small, medium and heavy industries, not overlooking the upcoming sectors and the ever dilating domestic consumers. The responsibility of planning, erecting and running the power stations and the subsequent maintenance of the transmission and distribution net work lies with the Board.

The metropolis of Calcutta has CESC as its major supplier of electricity. WBSEB in turn feeds CESC, the remote inaccessible areas, vast tracts of terrain etc. The long arms of the Board encompass the far and near in a wider perspective. This enhances the importance of WBSEB in the State's economical and industrial growth and general wellbeing. The year 1986-87 had been particularly a fortunate one. During this period WBSEB has experienced a significant increase in generation upto 5056.67 MU. The transmission and distribution systems have been geared up with additional substations and their successful synchronisation. This indicates an overall amplification of the Board's ambit of action.

The power situation in the State has touched a new high with reduced hours of load-shedding. This has naturally enthused the entrepreneurs to invest in the State with renewed interest.

WBSEB's import of electricity from different agencies has experienced a steady decline in the recent years. It has come down from 1120 MU in 1982-83 to 734 MU in 1985-86. The relegation is due to the fact that the concerned agencies could not keep up the required supply.

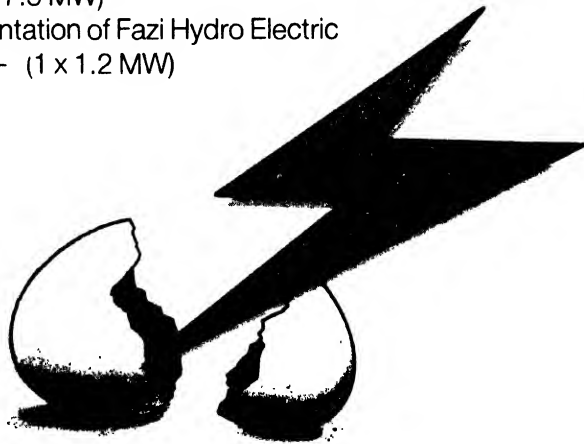
The hours of unrestricted supply by the WBSEB to Calcutta ascended to 7353 hours in 1986-87 from 2450 hours in 1982-83. The PLF registered a sharp rise from 36% in 1983-84 to 42% in 1986-87.

Complementing WBSEB's constant effort to hold the line of efficiency it has received the Planning Commission's consent for the renovation and modernisation of the Santaldih and Bandel Power Stations. The work is already in progress. Santaldih Thermal Power Station is now capable of generating more than 250 MW.

WBSEB's rapid development programmes have speeded up the following ongoing projects.

- (i) Rammam Hydro Electric Project-  
Stage 2 of 4 x 1.5 MW units.
- (ii) Teesta Canal Falls Hydel Power project-  
(3 x 3 x 7.5 MW)
- (iii) Augmentation of Fazi Hydro Electric  
Project- (1 x 1.2 MW)

## **WBSEB's New Power Projects**



- i. Bakreswar Thermal Power Project- 3 x 210 MW
- ii. Sagardighi Thermal Power Project - 4 x 500 MW (under Govt. of India's consideration)

- iii. Jaldhaka H.E. Project Extension - stage 1, 4th set - 9MW and Stage - 2, 3rd set - 4 MW
- iv. Identification of Micro mini hydel locations in North Bengal. (Accepted by REC)
- v. 132 Kms. 400 Kv Kolaghat - Jeerat single circuit line nearing completion. (Charged at 220 KV)
- vi. 400 KV Jeerat Sub-station successfully receiving power from Farakka Power Station.
- vii. WBSEB's consumer strength has touched 10 lakhs. In 2 years, 2 lakhs consumers have received domestic connections.
- viii. Under rural electrification scheme, 22,255 villages have been electrified and 52,398 agricultural pump sets have been energised by 1986-87.

It is a well known fact that WBSEB incurs the maximum loss due to regular power theft by hooking, tapping and





various other means. Illegal misuse of power during functions and festivals adds to the burden. Unscrupulous anti-socials damage transmission and distribution lines and equipment causing consequential misery to the rightful consumers. The Board's activities being spread over an immense area of the remotest nature it is often difficult to take action accordingly. Still WBSEB is taking ample measures to meet the challenge of such inconveniences.

The following pages depict our intention and dedication to ensure a stable and satisfactory power position in the State of West Bengal.

We aspire for optimum generation, unhindered transmission and well planned distribution in every stage of our performance.



## Lok Deep

Electrification of rural areas are absolutely important for the nation's progress because not only this contributes to rural economic regeneration, this further enhances the standard of living of the rural people by making them self-dependent, at the village levels. It will be wrong not to mention the benefits of the modern devices now available to the 'Lok deep' programme for communication, education, health etc.

LOK DEEP is an unique programme and is in a class of its own. It is devised to provide Electricity FREE OF COST to people living in remotest of areas. The track record of WBSEB in performing this task can easily be traced from the following tables :

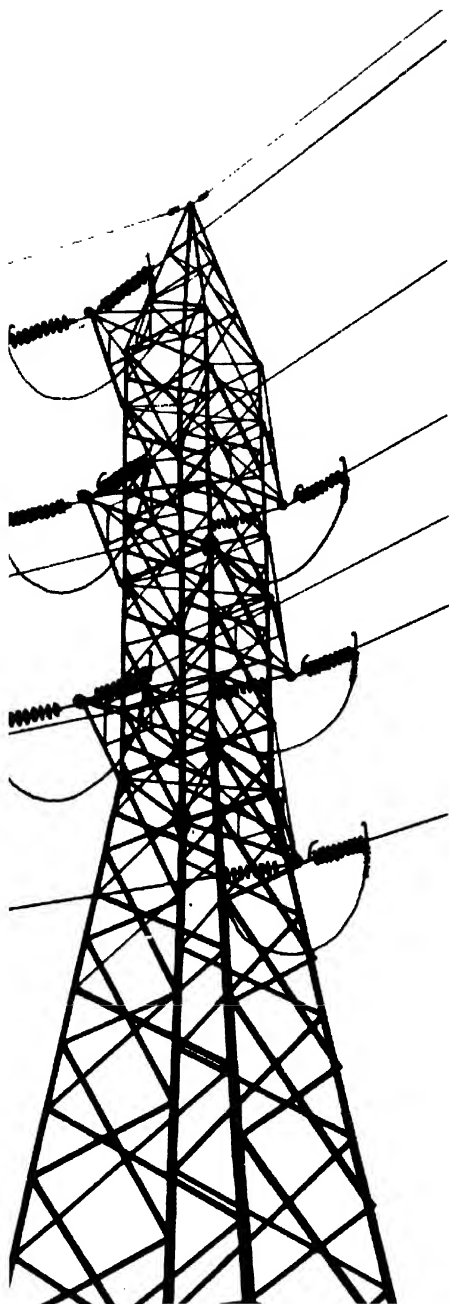


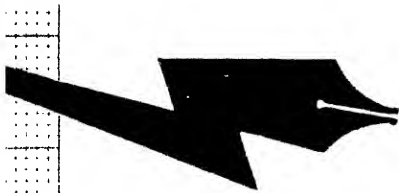
Under this Programme WBSEB has made Electricity available to 2319 families till February '87 in different districts of West Bengal

Name of Districts	No. of families benefited till Feb. 87
24 Parganas	127
Howrah	228
Hooghly	300
Birbhum	603
Midnapore	45
Bankura	61
Purulia	329
Murshidabad	242
Nadia	17
Malda	126
Jalpaiguri	52
Coochbehar	189
	<hr/> 2319

The Board has further plan to provide Electricity free of cost to many more families in other districts of West Bengal during the current year.

Burdwan	...	2900
24 Parganas (North)	...	2800
West Dinajpur	...	2000
Darjeeling	...	1600
		<hr/> 9300



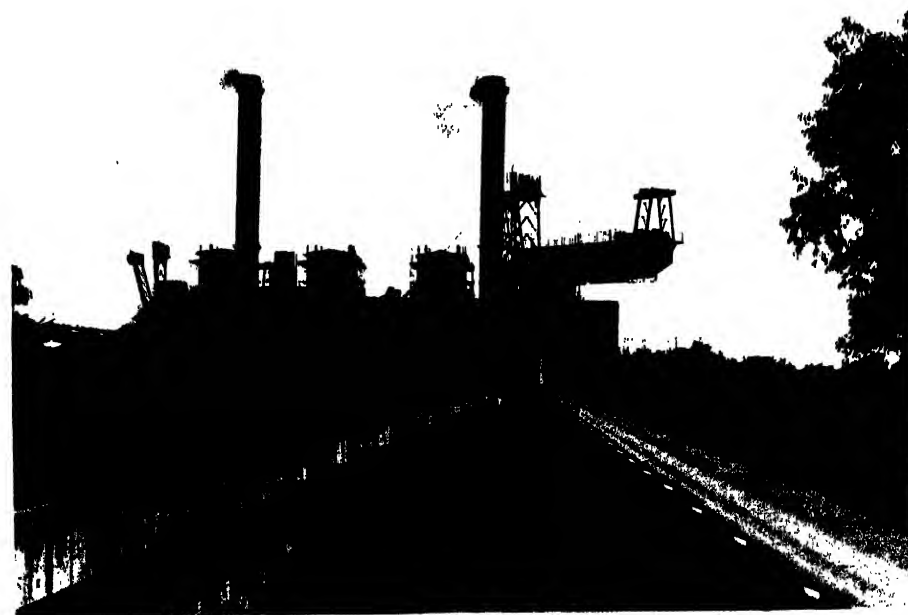


## Performance Indices of WBSEB (1981-82 to 1986-87)

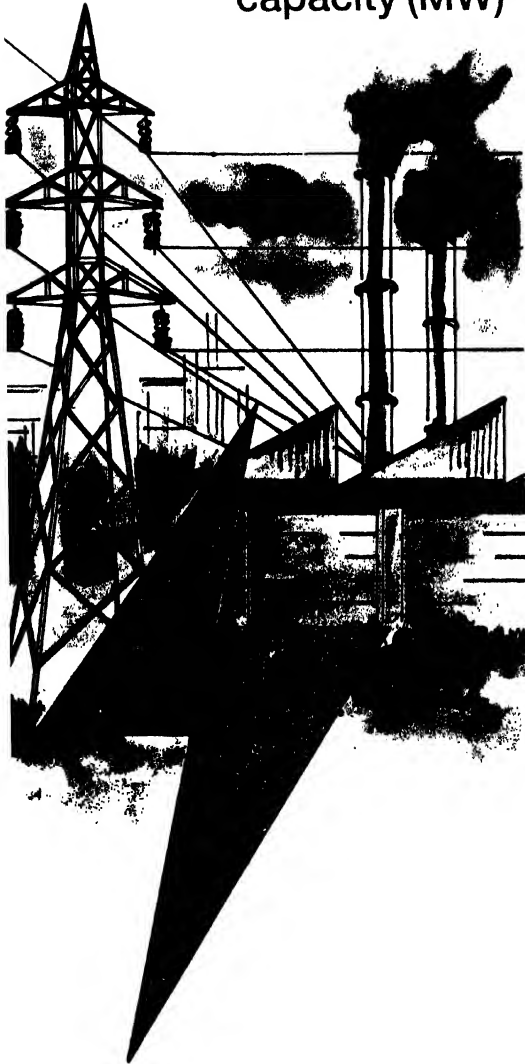
Sl. No.	Item (Unit)	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
1	Installed capacity (MW)	971	1181	1189	1399	1609	1190
2	Maximum Generation (MW) (South Bengal)	513	582	603	685	843	651
3	Energy Gen. (MU)	3162	3286	3459	3742	4755	3893
4	Daily Av. Gen. (MU)	8.7	9.0	9.4	10.3	13.0	10.7
5	Daily Import (MU)	2.5	3.1	2.5	2.2	2.0	5.1
							(Incl. import from WBPDC)
6	Restricted hours of supply to CESC (hrs./day)		17.3	12.1	11.4	6.1	3.9
7	Feeder Load Shedding (hrs./Day) Excl. bulk restriction	-	3.0	2.3	2.4	1.4	0.37
8	EHV Transmission lines (CKm) (66kV and above)	4171	4351	4441	4502	4608	4733
9	EHV Transformer capacity of EHV Sub-stations (MVA)	1933	2057	2130	2143	2228	2666
10	No. of EHV transformers in EHV Sub Stns	112	125	133	134	140	145
11	Village Electrification (Nos.) (cumulative)	16284	17594	18320	19201	20531	21881
12	Agricultural Pump Energisation (Nos.) (Cumulative)	25589	27429	31663	39431	47556	52398
13	Low & Medium Voltage consumers (cumulative) (Nos.)	624700	658000	729500	803150	922676	994676
14	Av. Monthly Revenue Receipt (Rs. crores)	13.3	15.6	16.9	17.8	24.0	28.6
15	No. of employees per MU generated.	12	12	11	11	9	11
16	No. of employees per 1000 consumers.	61	58	55	51	45	43
17	No. of Employment per MW of installed capacity (Nos.)	39	32	34	30	26	35
18	Annual Capital Investment including capitalisation of interest (Rs. crores)	144	154	124	150	193	143
19	Loan Repayment with interest (Rs. crores) (institutional Creditors only)	46	53	66	92	129	92
20	Thermal PLF (%)	40.9	41.3	36.4	37.0	42.2	41.8
21	Sp. Fuel Oil Consumption (ml/Kwh)	12.8	19.8	19.4	17.3	17.9	13.1

## Performance Indices: Average of all SEB

	Item	81-82	83	83-84	84-85	85-86	86-87
1.1	SP Fuel Oil Cons. (ml/Kwh)	—	—	20.8	22.5	15.9	15.5
1.2	Employment/MW of installed capacity (nos.)	30	28	27	25	23	—
1.3	No. of Employees per MU Cntrl	8	8	8	7	7	—
1.4	No. of Employees per 1000 consumers	29	25	24	21	20	—
2.0	All SEBs Installed capacity (MW)	25,746	16	30,149	32,659	35,901	—
3.0	Electrification of villages (cumulative) (All India) (lacs)	2.96	3.24	3.47	3.69	3.90	—
4.0	Energisation of Pump sets. (cumulative) (All India) (lacs)	48.7	51.7	54.9	58.3	62.3	—
5.0	All India Thermal PLF (%)	46.4	49.4	47.9	50.1	52.4	53.2
6.0	Generation (MU) (All SEBs)	96256	102615	105963	115649	113281	125723



## Energy Generation (MU) & Installed capacity (MW)

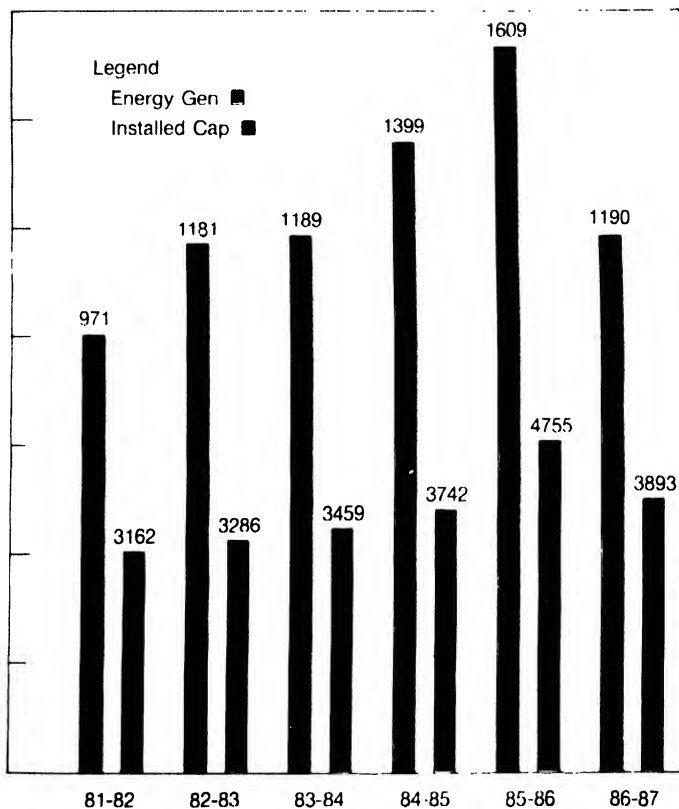


A comparative study of the WBSEB and av. of all SEB's reveal that whereas the growth in Energy Generation and Installed capacity of WBSEB has been 50% & 66% between 81-82 & 85-86 the growth of All SEB's have been only 18% & 39% for the same period. This certainly speaks for WBSEB's increased effort to generate more power with its available reserves for the development of the State.

Drop in installed capacity and energy generation in 1986-87 reflects transfer of Kolaghat TPS to WBPDC.

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## Energy Generation (MU) & Installed capacity (MW)



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## Maximum Generation in South Bengal.

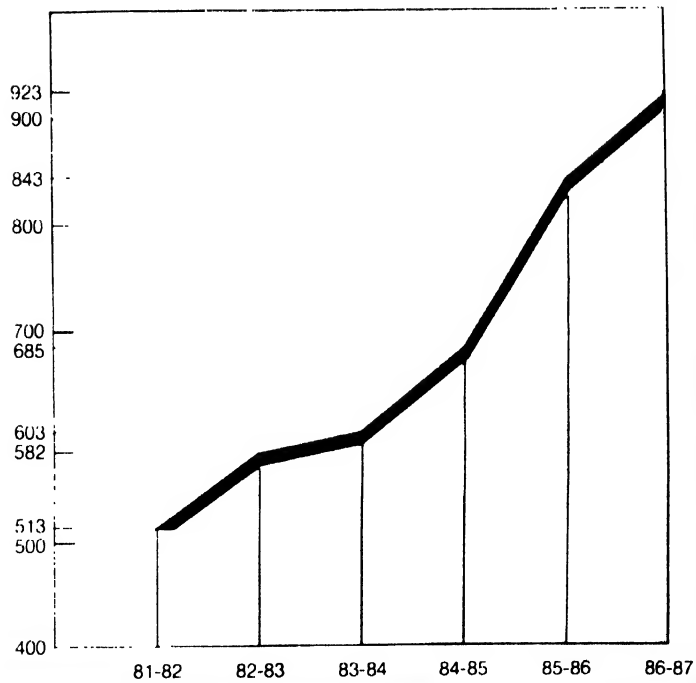
WBSEB is working continuously for generation of more power and has achieved an increase of 651 MW in 1986-87 over 1981-82 in the Southern part of the State. The increased generation is a step towards achieving its goal for optimisation of efficiency.



**WBSEB**



## Maximum Generation in South Bengal.



**WBSEB**

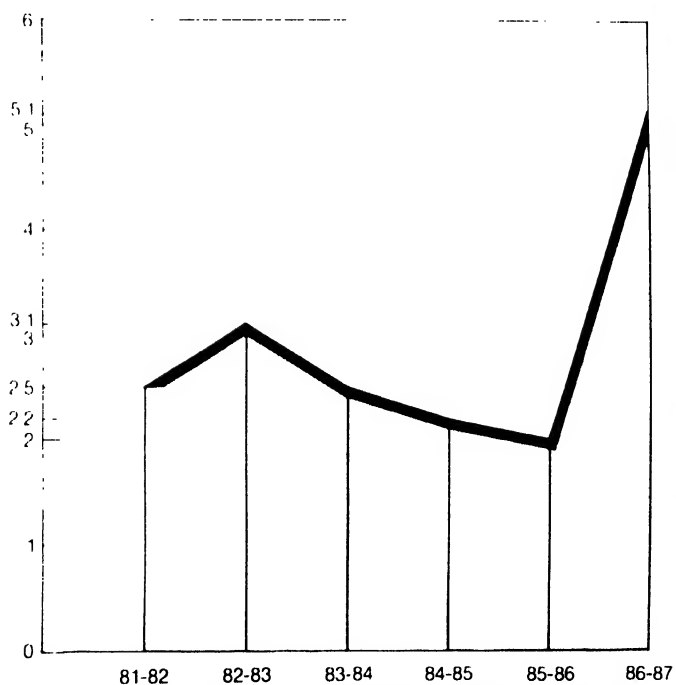
## Daily Average Import (MU)

In 1981-82 the import of power from different sources stood at 2.5 million units & it has increased next year by 24% but since then the Board's drive for self-sufficiency has brought down the import to 2 million units in 1985-86. The sharp rise in 1986-87 reflects import from WBPDC ( Kolaghat TPS )



**WBSEB**

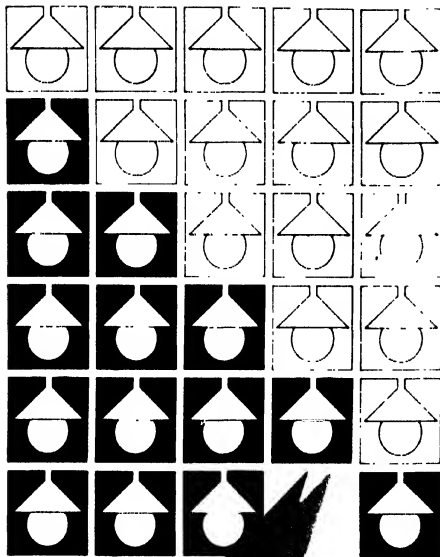
## Daily Average Import (MU)



**WBSEB**

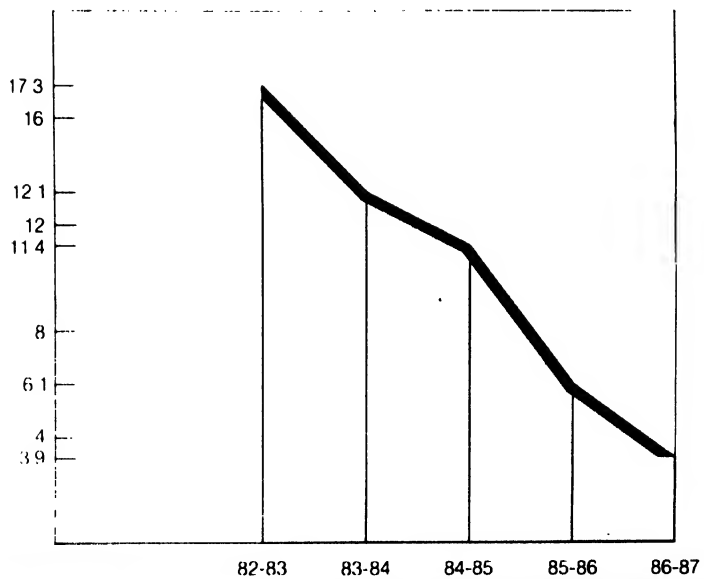
## Restricted Power Supply (Hours/Day)

Though the demand for electricity is moving at a brisk rate the WBSEB units have, over a period of four years, brought down the restriction on power supply to the system to a great extent from 17 hrs. in 1982-83 to 3.9 hrs. in a day in 1986-87. This also indicates higher selling of electricity with every passing day.



**WBSEB**

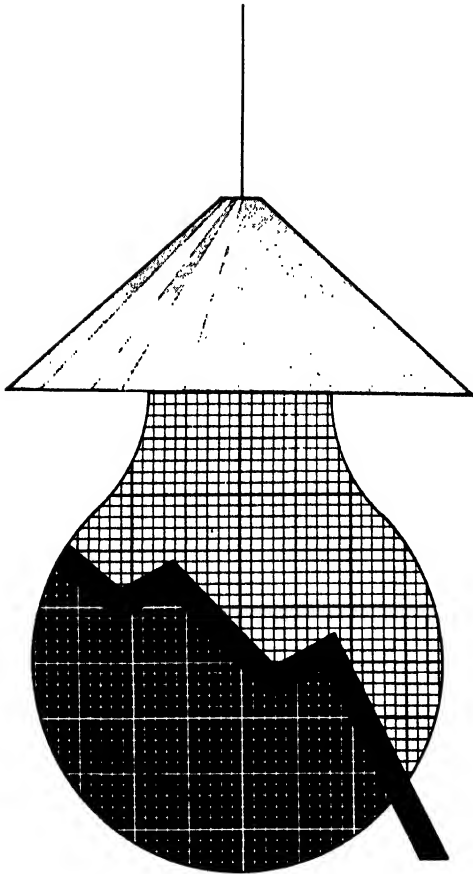
## Restricted Power Supply (Hours/Day)



**WBSEB**

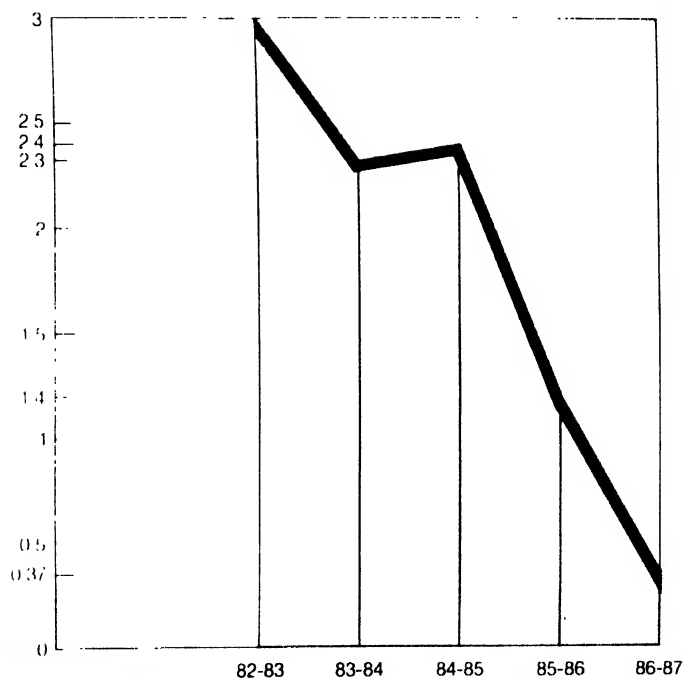
## Average Hours of Load-shedding

Though the links with hydro power systems are yet to be strengthened WBSEB has brought down the average daily load-shedding from 3 hours in 1982-83 to 22 minutes 12 sec. in day in 1986-87. It shows the Board increased effort in carrying out its social & commercial responsibilities for consumer benefits.



**WBSEB**

## Average Hours of Load-shedding



**WBSEB**

## **EHV Transmission lines (Ckm) (66 KV and above)**

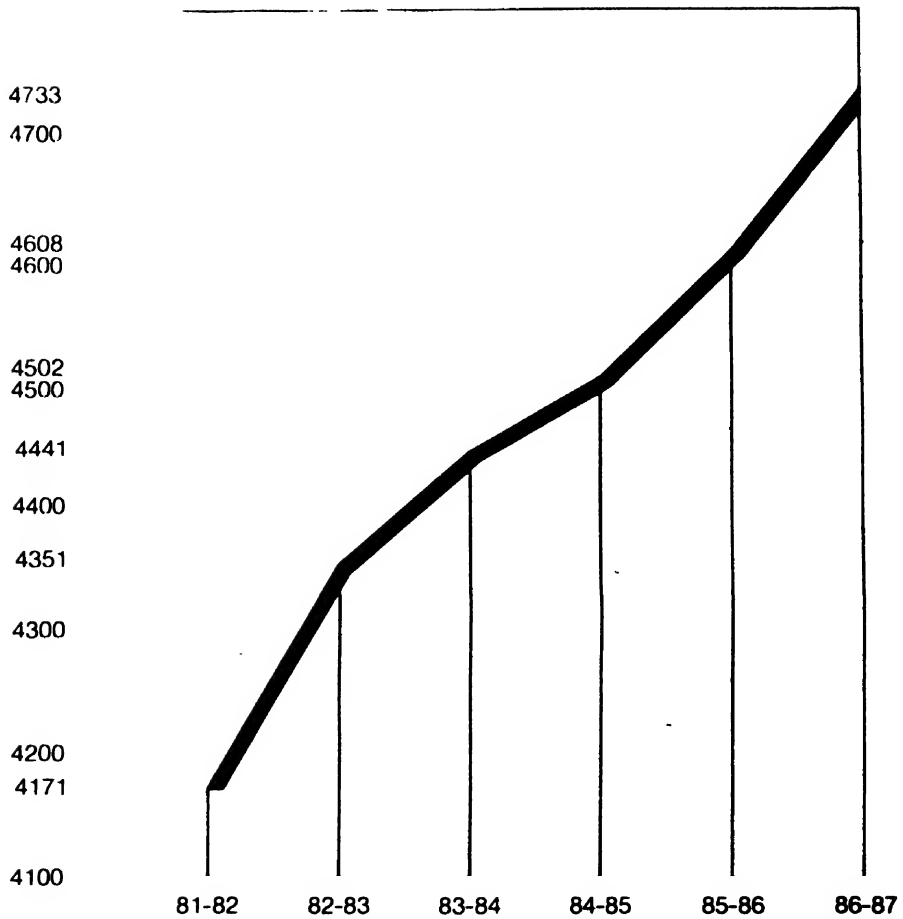
A growth of 566 Ckm speaks for the tremendous effort made by WBSEB to expand its EHV Transmission lines throughout the State. This is necessary to bring the available power within easy reach of the consumers thus making the quality of power supply improved.



***WBSEB***



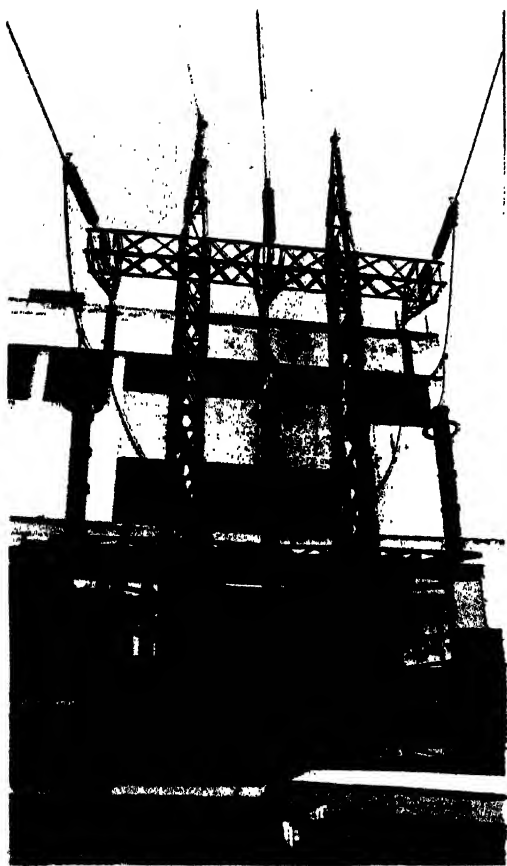
## EHV Transmission lines (Ckm) (66 KV and above)



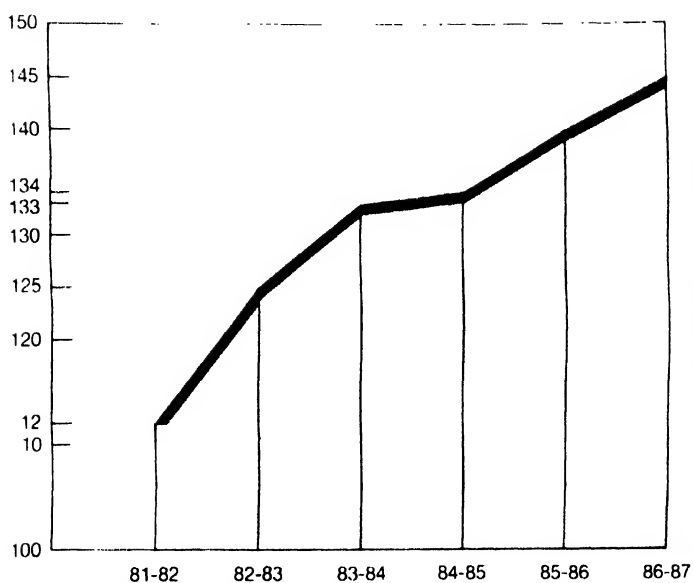
## No. of EHV transformer in EHV substation.

In order to arrange uninterrupted power supply as also better distribution and quality power WBSEB is continuously increasing its number of EHV transformers in EHV sub-stations. The effort has been proved beneficial to users of remote corners who are now assured of uninterrupted power supply.

Numbers of EHV transformers in EHV sub-stations have been increased for uninterrupted power supply to remote areas of the State and also for proper distribution and quality power supply.



No. of EHV transformer in  
EHV substation.



**WBSEB**

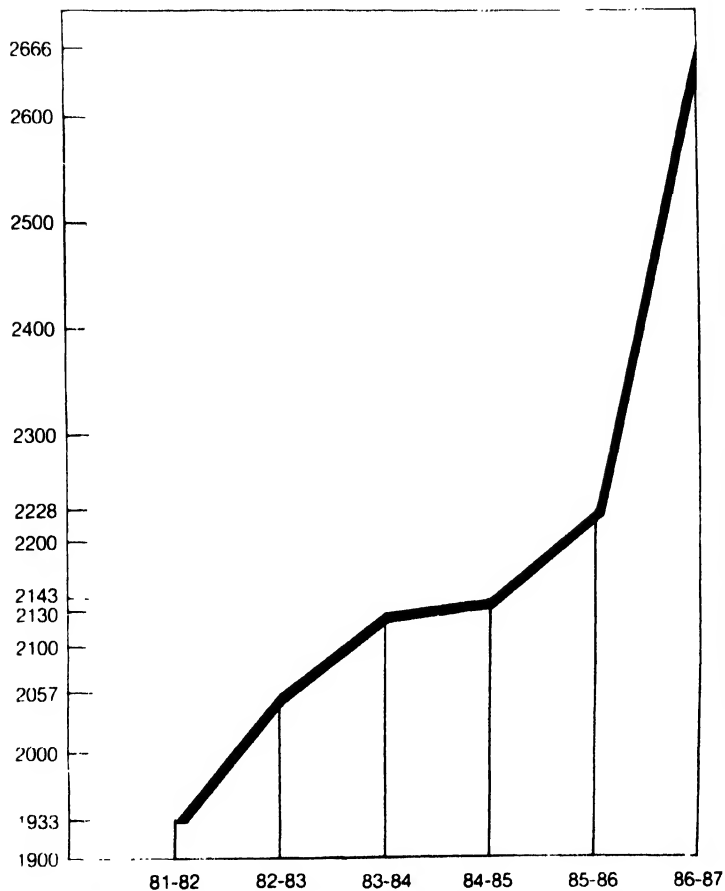
## EHV Transformer Capacity of EHV Substation (MVA)

Capacity of transformers has been augmented by installing new transformers with higher capacity and replacement of old transformers by new ones with higher capacity to improve the quality power supply and reach power to distant places in the State.



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## EHV Transformer Capacity of EHV Substation (MVA)



**WBSEB**

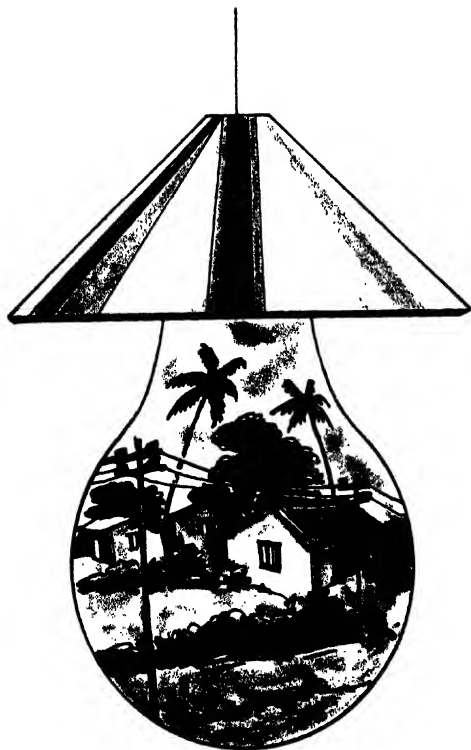
## Village Electrification (Cumulative)

WBSEB's endeavour to make the national programme in rural electrification successful is what the comparative study reveals.

### GROWTH:

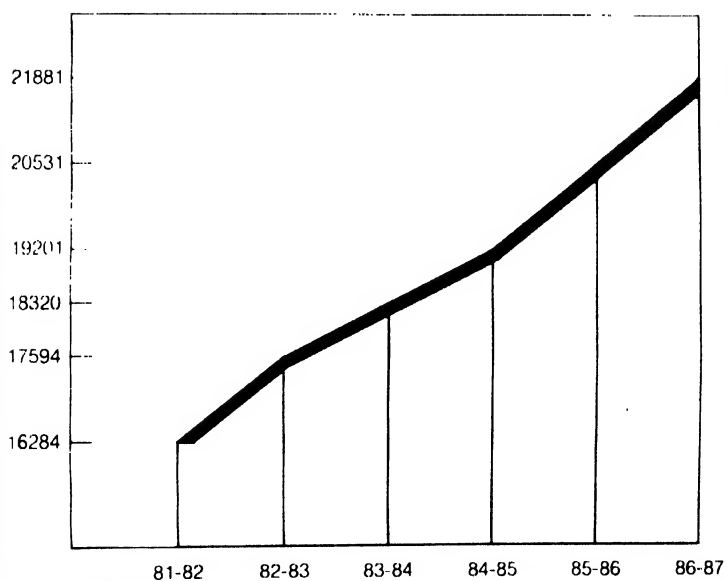
WBSEB : 81-82 to 85-86 : 26%

All SEB : 81-82 to 85-86 : 32%



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## Village Electrification (Cumulative)



**WBSEB**

## Energised Agricultural pumpsets

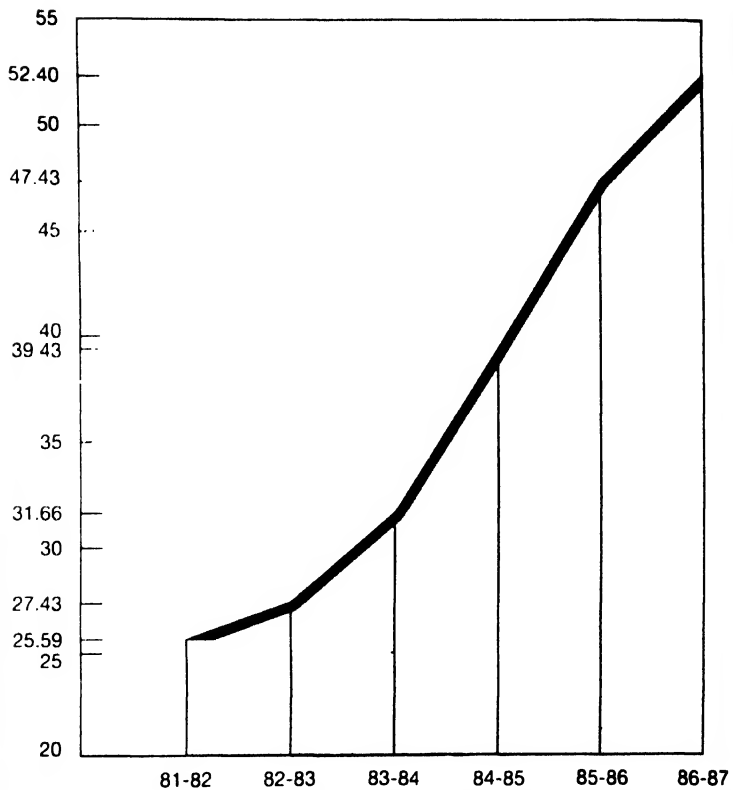
The comparative study reveals that how important WBSEB is today for the improvement of the food and other agro products of the State. The comparative study shows how WBSEB plays an important role in improving the State's food grain and other agroproducts. Compared to the all India increase of 28.5% in the number of electrified pumpsets, it is 105% under the network of WBSEB. This also speaks of WBSEB's contribution to the economic growth of West Bengal.



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## Energised Agricultural Pumpsets (in .000)



**WBSEB**

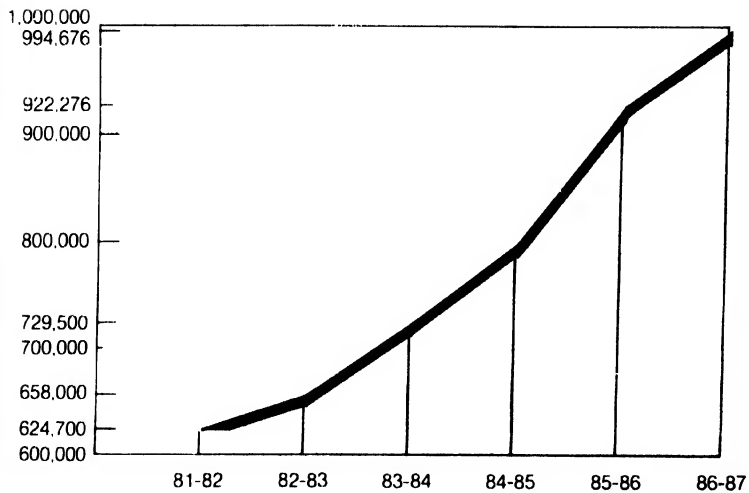
## Low & Medium Voltage Consumers.

The graph alongside illustrates the sharp rise in number of low & medium voltage consumers under West Bengal State Electricity Board. Every year 74,000 new consumers are given power connection on average for domestic and commercial, agricultural and industrial purposes. An all out effort is being made by WBSEB to effect more service connections to the intending consumers.



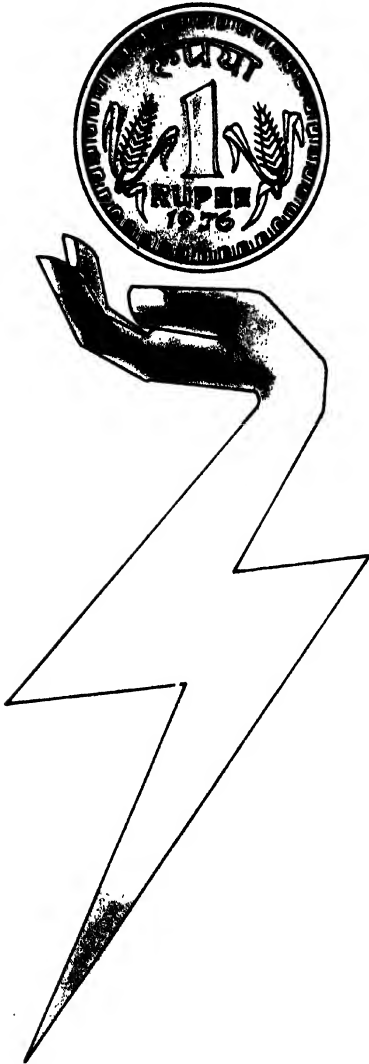
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## Low & Medium Voltage Consumers (Nos.)



**WBSEB**

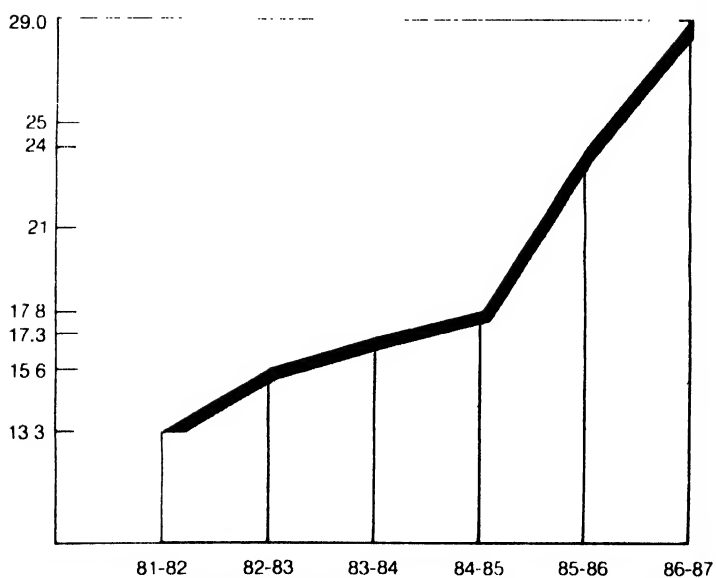
## Average Monthly revenue Receipts



The graph reflects the increase in monthly (av.) revenue receipts from Rs. 13.3 Crores in 1981-82 to Rs. 28.6 Crores in 1986-87, an increase of 132%. This was possible due to improved generation, distribution, sales and accelerated drive for collection.

**WBSEB**

## Average Monthly revenue Receipts



**WBSEB**

## Employee Per MU generation

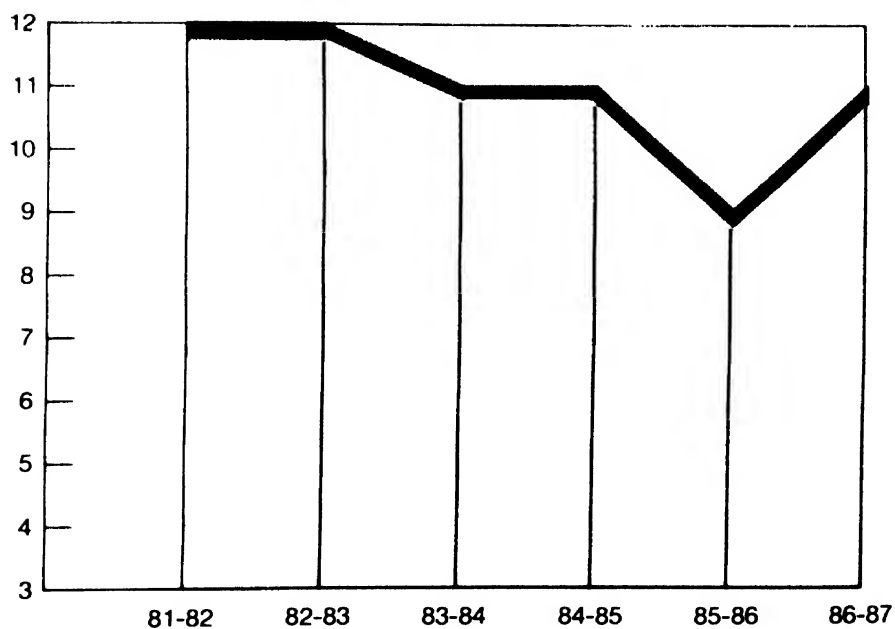
The comparative study shows that WBSEB is successful in bringing down the number of employee per MU generation. But for WBSEB this effort will continue strongly till the figure is equal or even lower than the all India average.

The rise in employment generation ratio in 1986-87 is due to transfer of Kolaghat TPS to WBPDCCL



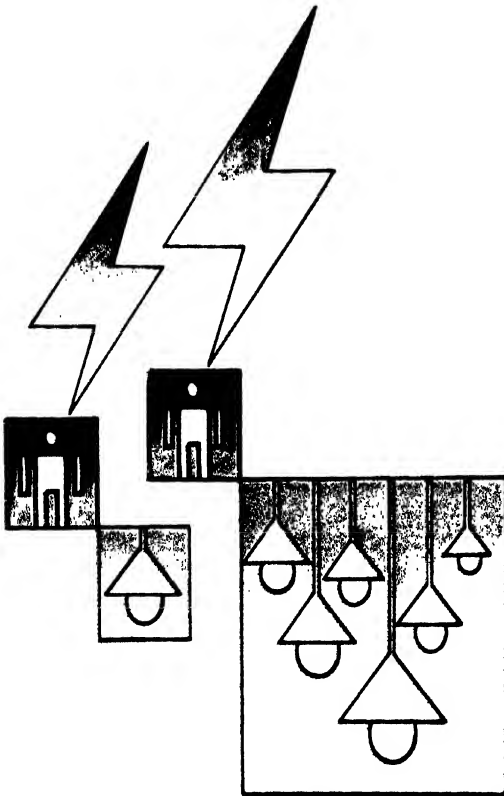
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## Employee per MU generation (Nos.)



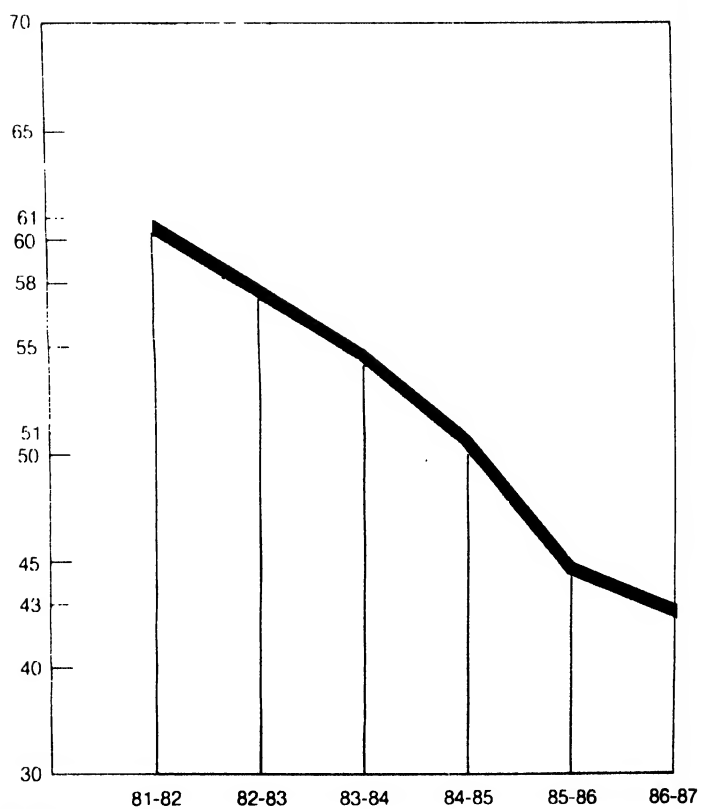
## Employees per 1000 consumers

This graph shows how each WBSEB unit output has contributed to lower the number of employees per 1000 consumers under the Board. It proves that average employee output has also improved and also that man power productivity matches customer demand even at peak levels. It also reflects the increase in net capability of each WBSEB employee.



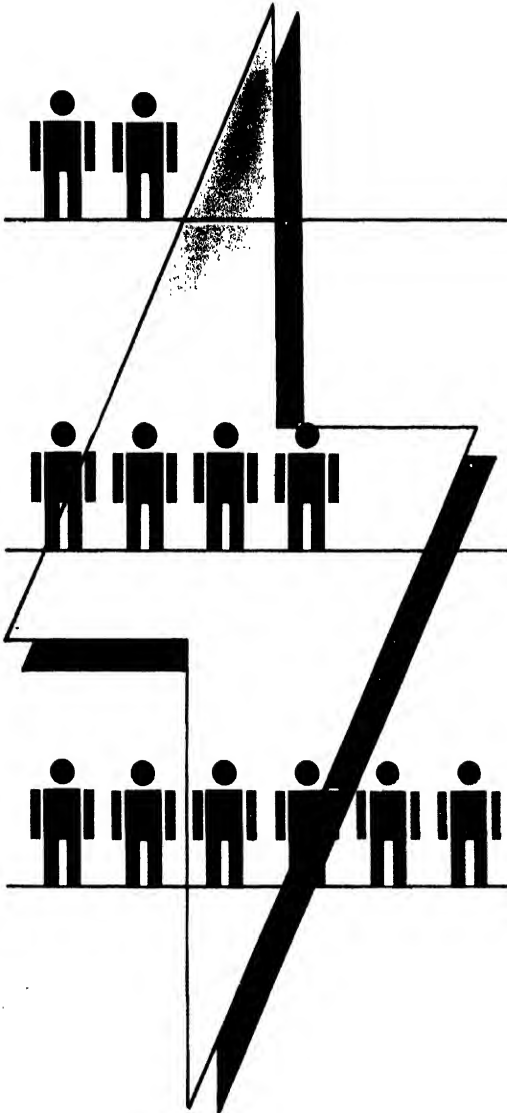


### Employees per 1000 consumers (Nos.)



**WBSEB**

## Employees per MW of Installed capacity

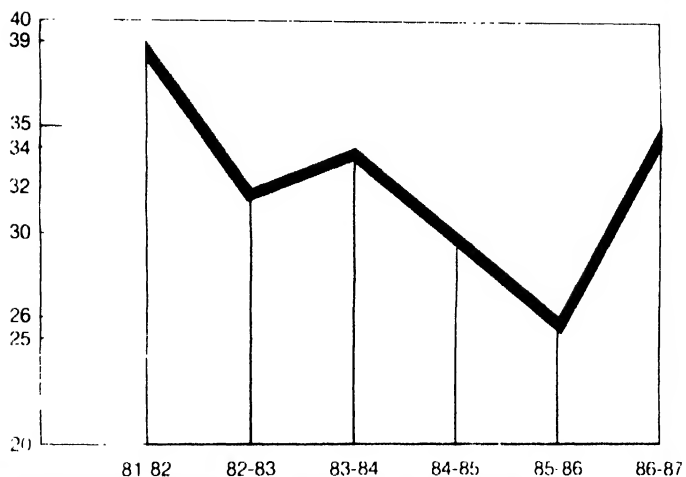


This graph too shows tremendous increase in WBSEB's manpower productivity bringing the number of employees/MW of installed capacity down from 39 in 1981-82 to 26 in 1985-86. However, this will continue even more successfully through the maximum use of retraining and redeployment opportunities, proper utilization of manpower, external recruitment restrictions etc, till it is at least levelled with the corresponding figure of all the SEB's average.

The rise in employment/MW ratio in 1986-87 is due to transfer of a major power station, Kolaghat TPS to WBPDC.

**WBSEB**

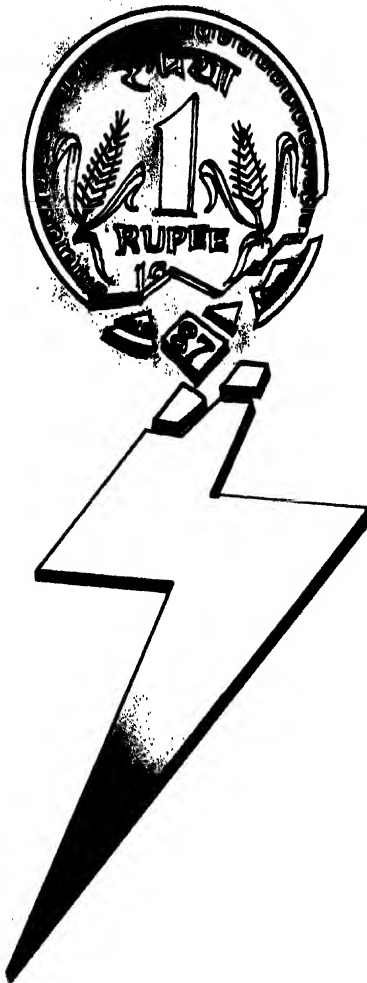
# Employees per MW of Installed capacity (Nos.)



**WBSEB**

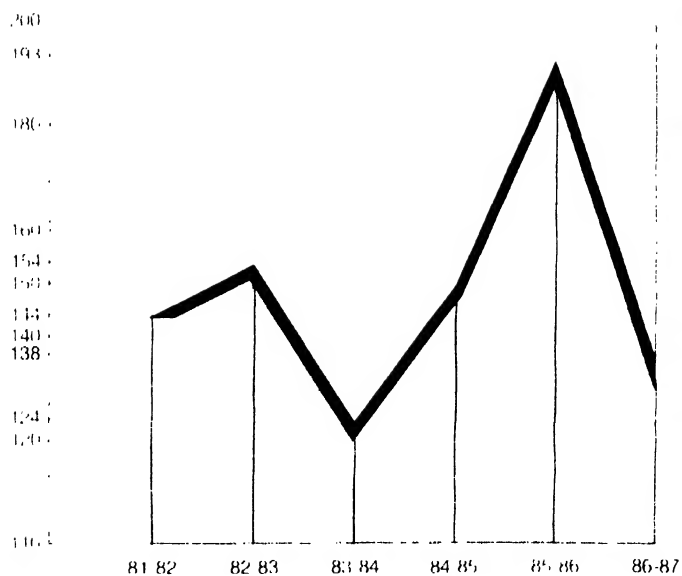
## Capital investment

Annual capital expenditure for WBSEB has increased steadily from 1983-84 to 1985-86 since new plant and machinery are being increased for more quality power and transmission system. In the graph it indicates the success in holding the expenditure line. Kolaghat T.P. is now no more with WBSEB for which capital expenditure has gone down in 1986-87.



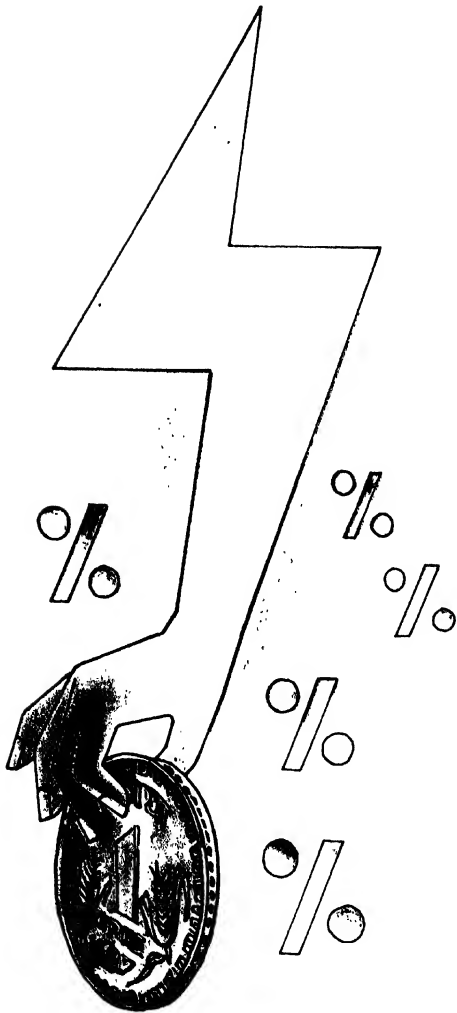
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## Capital investment



**WBSEB**

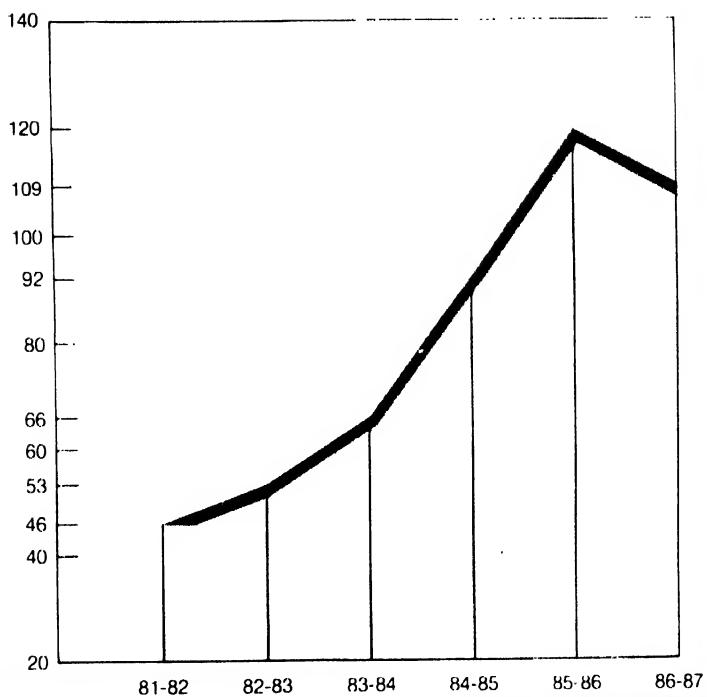
## Repayment of Institutional loans with interest



This graph shows heavy burden on WBSEB's financial management which is a story unprecedented. The repayment rate has grown phenomenally by 237% from 1981-82 in absence of any equity capital, out lining the Board's success in becoming financially sound & highly credible.

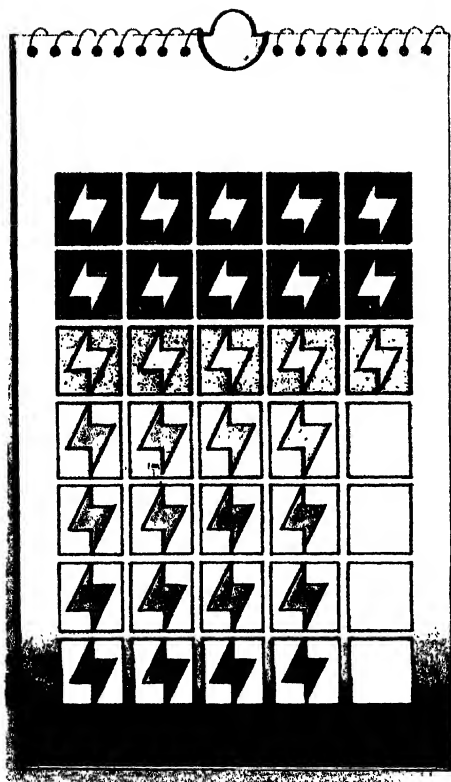
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## Repayment of Institutional loans with interest (Rs. crores)



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## Daily Average Generation (MU)



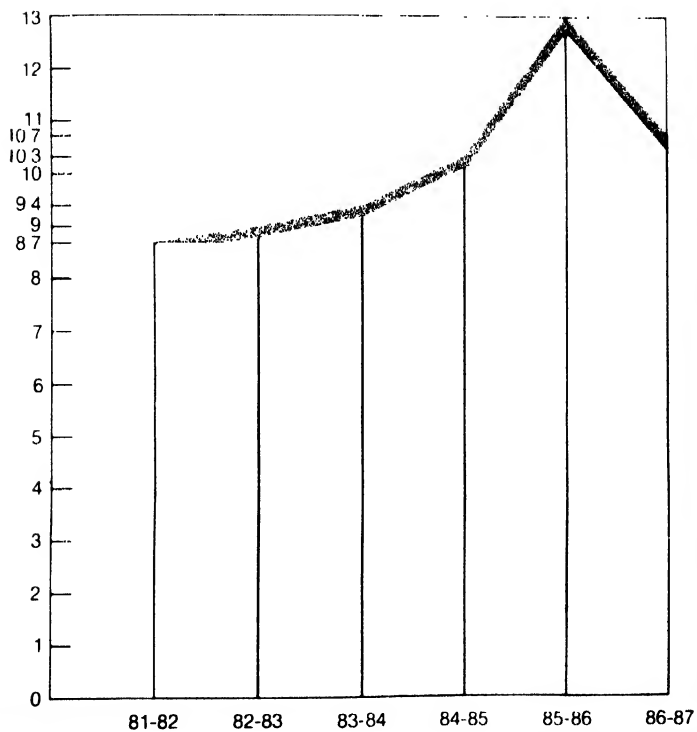
WBSEB's sustained effort for progress is reflected in its all activities. The graph alongside will make one reassured about Board's activities recently. The sharp increase in Daily generation is a result of total cohesion in meeting the demand targets.

Drop in daily generation in 1986-87 is due to transfer of Kolaghat TPS to WBPDCI. in 1986-87.

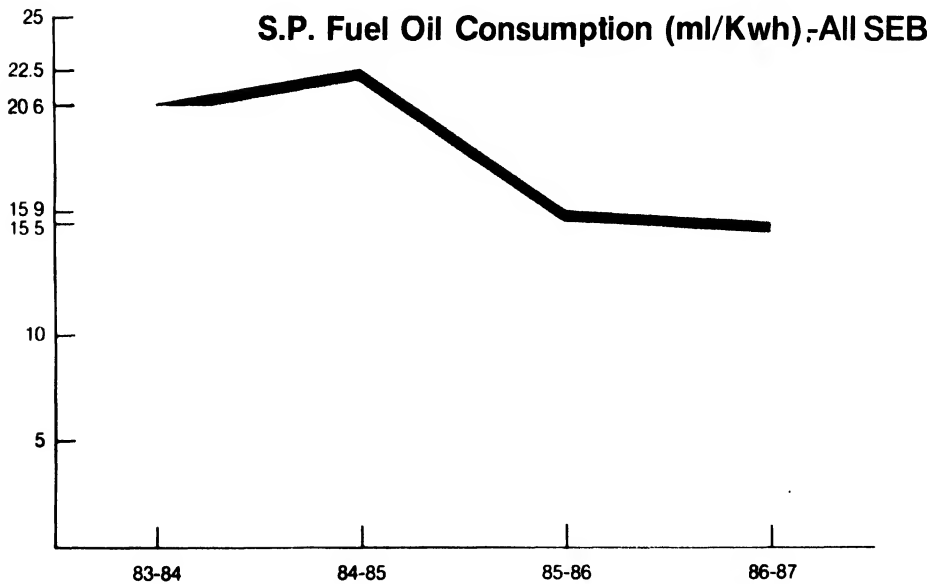
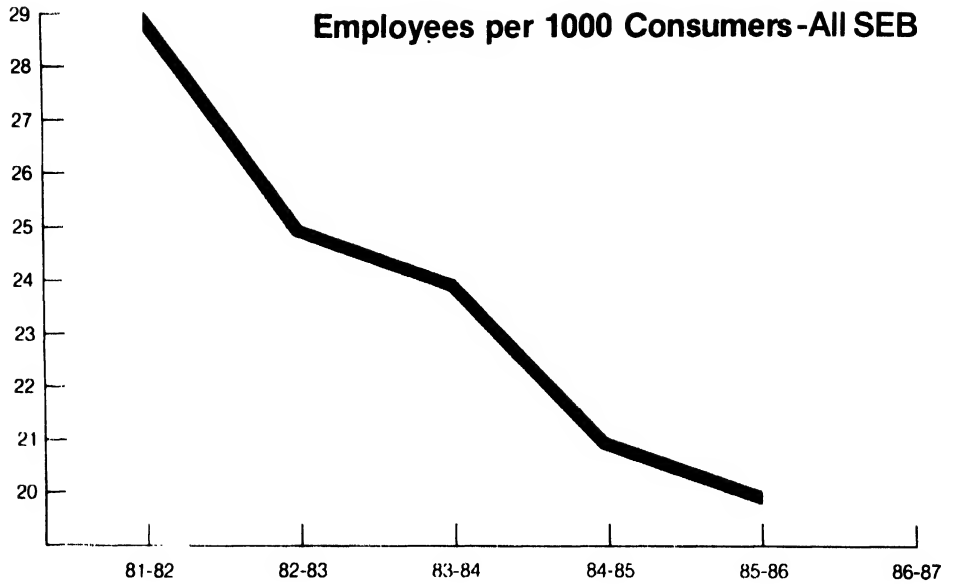
**WBSEB**

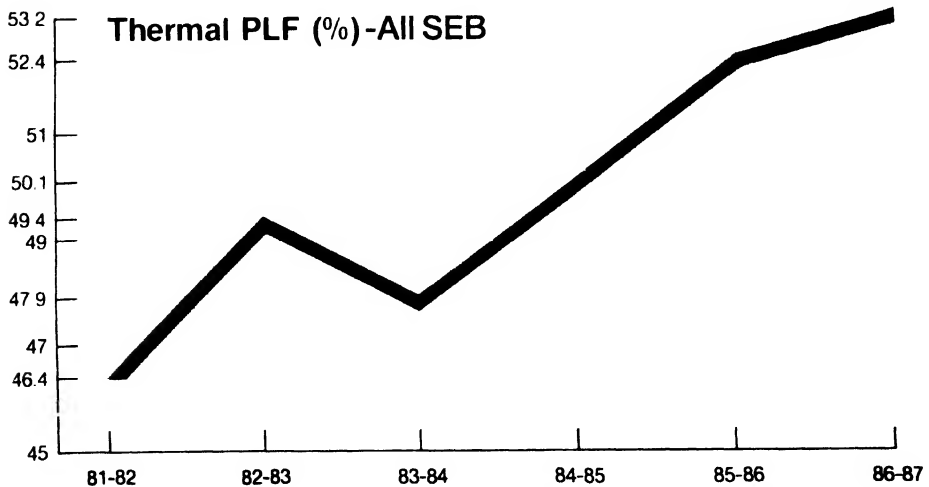
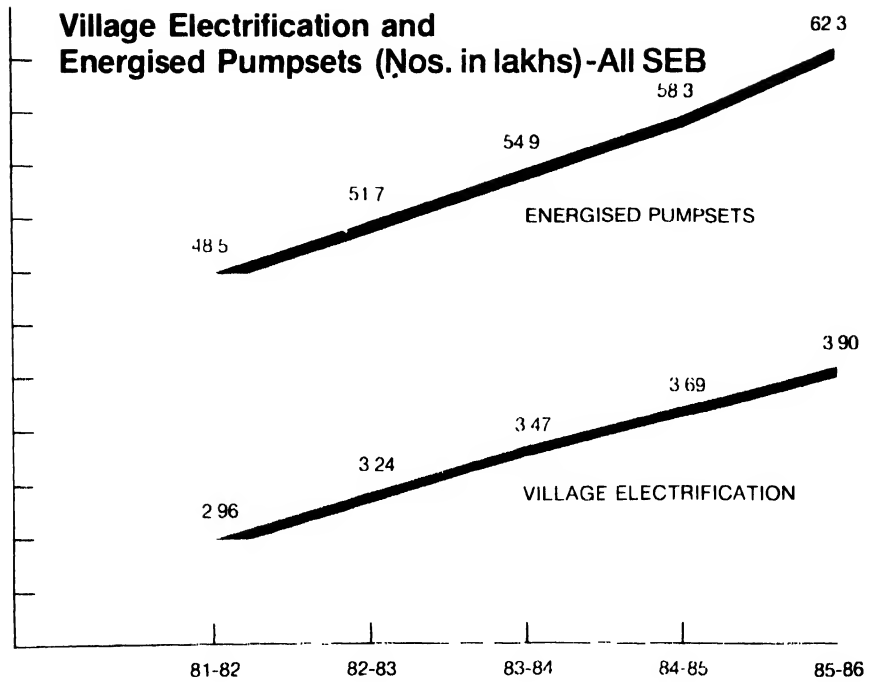


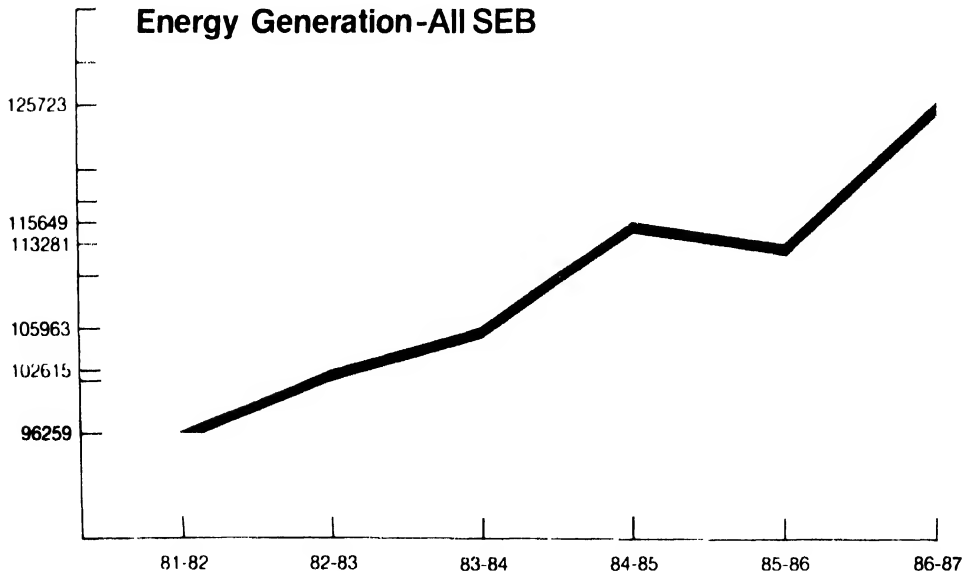
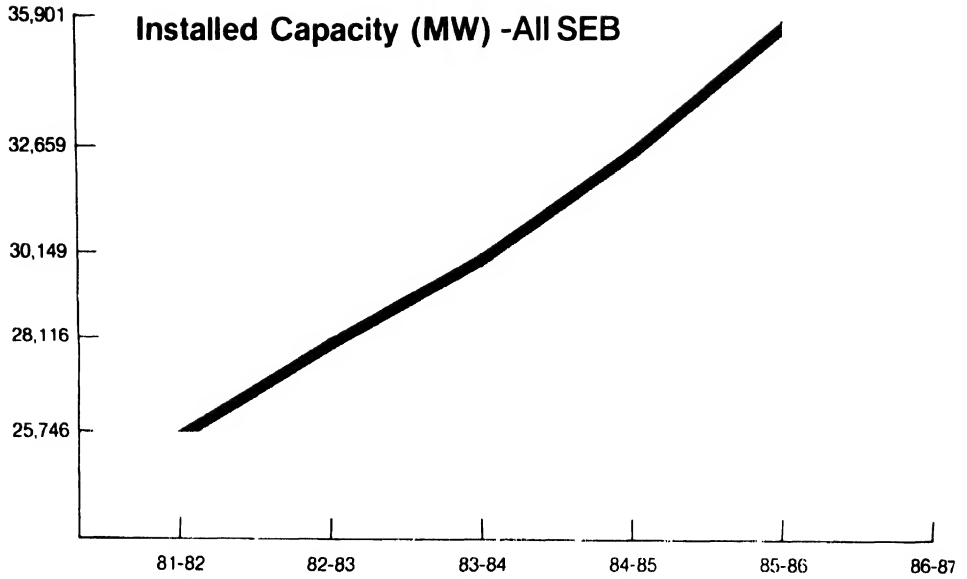
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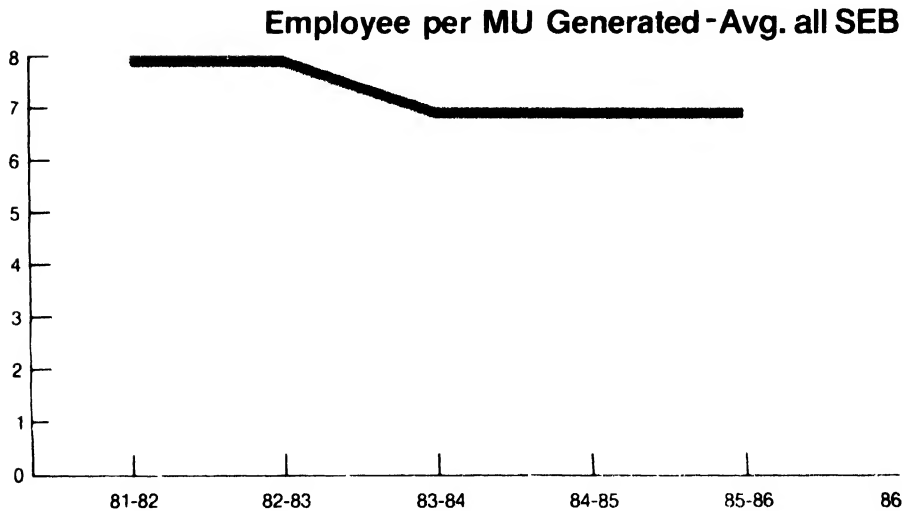
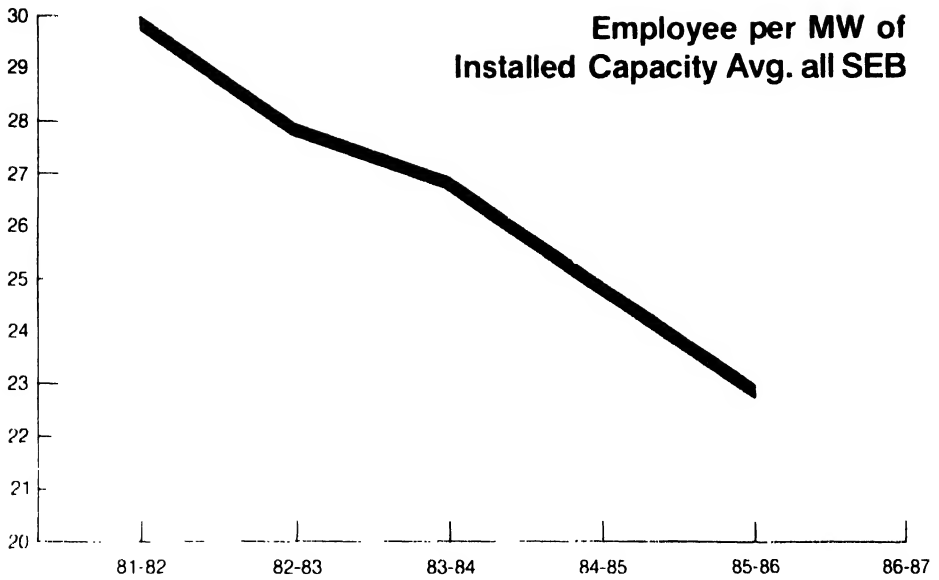


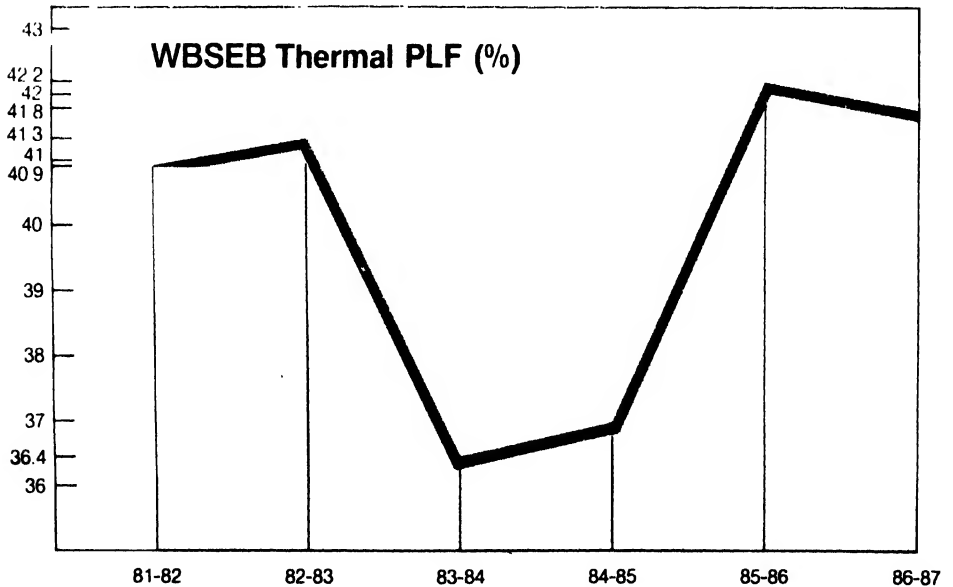
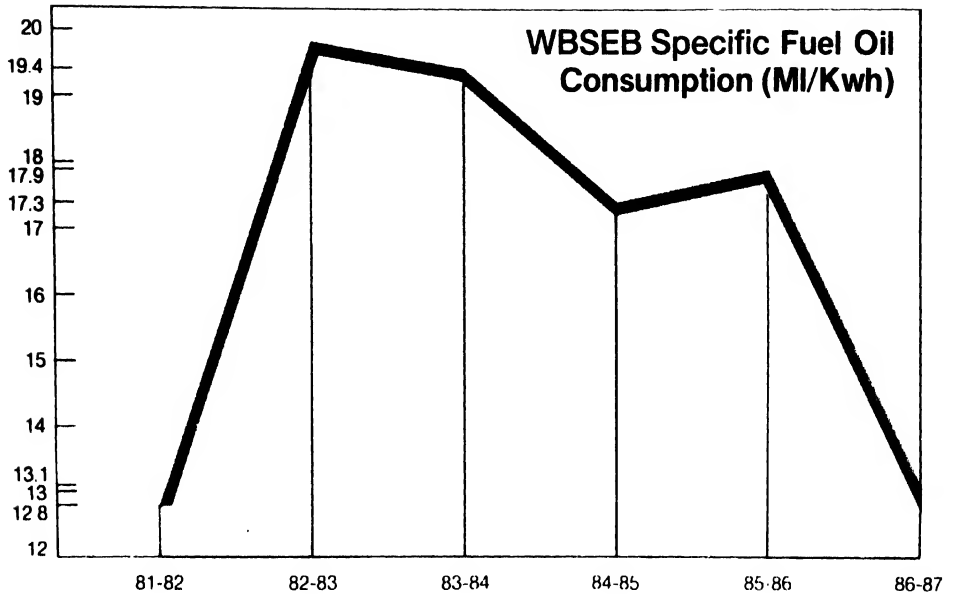
**WBSEB**











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